



DIVERSITY OF ROADSIDE PLANTS IN THE THREE WALKWAYS OF SITE 3  
DELTA STATE UNIVERSITY, ABRAKA, NIGERIA



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**Abstract:**

An experiment was carried out with the aim to identify diversity of plant species along the 3 walkways of Site 3, Delta State University, Abraka in 2021. Plant identification and documentation were carried out within the study area for the identification of observed species using relevant materials such as field note book, digital camera for photograph and some of the observed plants were also printed out for identification. A total of fifty-five species of plants were encountered and documented during this study, which were distributed across herbs, shrubs and trees. The distribution of life form of plants encountered in the study area showed that herbs were the most dominant life form with 34 species, followed by trees with 12 species, while shrubs were the least occurring life form with 8 species. The plants cut across twenty-seven (27) different families with Asteraceae (5 species) having the highest occurring number of species, this was followed by poaceae (4 species), Fabaceae, Combretaceae, Anacardiaceae, Malvaceae, Euphorbaceae, Loganiaceae, Solanaceae, Juncaceae, Lamiaceae, Annonaceae, Convolvulaceae, Cyperaceae, Verbenaceae, Cupressaceae, Acanthaceae and Myrtaceae has one species each. This study has provided details on the diversity of plant species growing in the study area, and also highlighted the different life forms, families and dominant species in the area. The study recommends that there is need to deduce an effective means of conserving the species through ex-situ methods.

**Keywords:**

Roadside plants, walkways, Site 3, DELSU, Abraka

**Introduction**

Plants are beneficial to humans, they determine the survival of man. Corlett (2016) noted that commercial plants products come from a very narrow range of plant species, a life based on only these species would be unhealthy. Urban dwellers use a wide range of plant species for various purposes while rural dwellers tend to use many more. Wild plant food contributes to nutrition and food security, and numerous additional species are used in traditional medicine. Moreover, plants are the basis for all terrestrial ecosystems. Fernando (2012) stated that plants are important environmentally for various reasons. To some animals plants species may be their only source of food and if taken away, the animals depending on those species may not survive. A removal of one plant species could also be detrimental in removing an entire ecosystem of living entities because certain animals consider the plants that they use among them as their homes (Agbogidi, 2019).

Plants have been viewed primarily as a source of food. Plants are integral to the ecosystems they inhabit and contribute towards the enrichment of their environment (Agbogidi, 2021b). Plants improve their habitats by constantly filtering the air, water and soil. Plants are considered as the most generous living beings and this is not denying the truth that life on earth will not be possible without plants around us. This is because plants produce oxygen as well as grow food for human beings and animals. Plants are also responsible for absorbing the carbon dioxide present in the air and releasing fresh air for human to breathe (Agbogidi, 2021a).

Corlett (2016) further stated that the estimation of plant species across the globe is around 500,000 species, the only taxonomic groups whose diversity is through to substantially exceed that of land plants. This brings to

the diversity of plants in a particular land space. Plant diversity in a place is natural. Some plants species are planted by human while others grow naturally. There are mixes of plants in any given geographical location. There exists diversification of plants in a land either by human doings or by natural means.

According to Adaeze *et al.* (2017), plant communities are broadly distributed into biomes based on the form of the dominant plant species. For example, grasslands are dominated by grasses, while forests are dominated by trees. Biomes are determined by regional climates, mostly temperature and precipitation, and follow general latitudinal trends. In principle, it is possible to examine competition at the level of the limiting resources if a detailed knowledge of the physiological processes of the competing plants is available. Osawaru *et al.* (2013) noted that a healthy ecosystem depends on plant diversity amongst other factors. Plant diversity is the variability of plant species and the ecological processes that support them within a specified geographical region. About 7,895 plant species have been recorded with 128 endemic species in Nigeria. Its relevance in any nation to human development is in the areas of agriculture, human health, business and industry, leisure, cultural and aesthetic values and ecological services (Agbogidi, 2019).

Plant diversity has become an interesting subject for many scholars to research. This is because; there are no pieces of land that grows a particular plant. However, there is still a lack of quantitative information on naturalized plants for major region of the country especially minor locations like Abraka. Floras of these regions are either not existent or are not computed, making it difficult to assess the natural plant diversity population. It is very true that many of the valuable plants generic resources are fast disappearing due to climate change. There is an urgent need to document

current plant diversity status in site 3 of Delta State University, Abraka so as to guide in the conservation plans to salvage the residual diversity of plants. Therefore, this study provides specific and comprehensive information on the species enumeration, diversity, dominant species and conservation status of the plants at site 3 walkways in Delta State University, Abraka with a view to proffering ways to conserve them and also to ensure their sustainability.

## Materials and methods

### Study Area

The study was carried out in Site 3, Delta State University, Abraka, located in the Ethiope East Local Government Area of Delta State. It is situated in the north eastern part of Isiokolo, the Local Government Headquarter. It lies between latitude 05°45' and 05°50'N and longitude 6°05'E and 6°05'E of the equator (Figure 1) (Ofomola *et al.*, 2018). The town is bordered to the North by Obiaruku, to the south by Eku, to the east by River Ethiope and to the West by Abraka inland within the Niger Delta Basin.

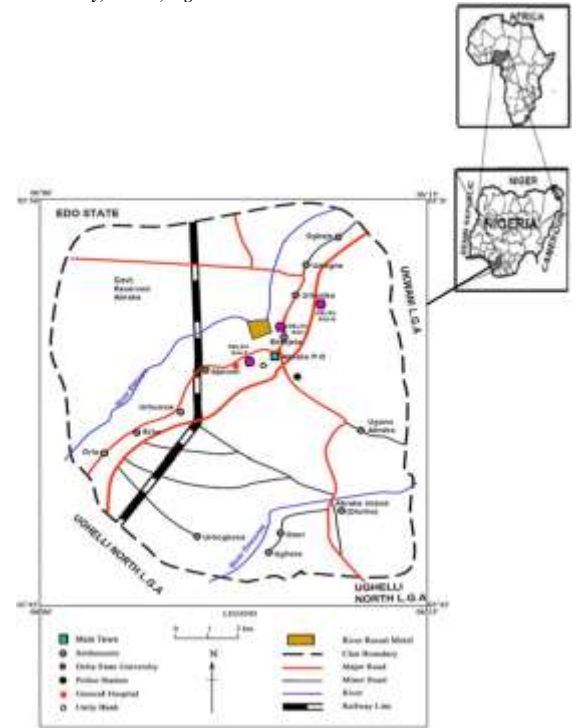
The town has a poor road network with the major tarred road linking the Sapele Express way and Sites 1 and 2 of the University. As a result of the presence of the University in the community, a lot of developmental activities has been experienced, these include the construction of roads within the campus by the University authority and TETFund, increase in commercial and social activities and building of projects by the government. These have also increased the population and human activities resulting in alteration of plant biodiversity (Ofomola *et al.*, 2018).

### Plant Sampling/Survey

Sampling of plant species was carried out in the different walkways in site 3 for identification. The sampling materials included field note, biro (writing materials) and digital camera for identification of plant species at the walkways in Site 3.

### Plant Identification

Samples of the plant species were subjected to scientific identification for the purpose of record keeping. Identification was done using Flora of West Tropical Africa, Nigerian trees and to outline pictures of medicinal plants in Nigeria according to Odugbemi (2008).



**Figure 1:** Map of Abraka showing Delta State University, the study area  
Source: Ofomola *et al.* (2018)

## Methodology

The study was carried out within a period of one (1) month. Visits were made to the walkways twice a week till the end of the study. Various life forms of plants species were assessed as trees, shrubs and herbs.

## Data analysis

Several data such as; plant used for traditional medicine, plant parts used and the diseases they serve as treatment for were analysed.

## Results

Results obtained from this study indicated that most diversity of plant species along the 3 walkways of Site 3, Delta State University, Abraka exhibit three major life forms namely: trees, shrubs and herbs. Their common names, botanical names, family names, life forms are presented in Table 1 while the parts used for medicinal purposes are shown in Table 2.

A total of fifty-five species of plants were encountered and documented in course of this study, which were distributed across herbs, shrubs and trees. The distribution of life form of plants encountered in the study area showed that herbs were the most dominant life form with 34 species, followed by trees with 12 species, while shrubs was the least occurring life form with 8 species. The plants cut across twenty-seven (27) different families with Asteraceae (5 species) having the highest occurring number of species, this was followed by Poaceae (4 species), Fabaceae, Combrecaceae, Rufubaceae, Talinaceae, Caricaceae, Anacardiaceae, Malvaceae, Euphorbaceae, Loganiaceae, Solanaceae, Juncaceae, Lamiaceae, Annonaceae, Convolvulaceae, Cyperaceae, Verbenaceae, Cupressaceae, Acanthaceae and Myrtaceae had one species each.

Table 1: Diversities of plant species along the 3 walkways of site 3, Delta State University, Abraka

S/N	Common Name	Scientific Name	Family Name	Life form
1.	Cassava	<i>Manihot esculenta</i>	Rufubaceae	Shrub
2.	Water leaf	<i>Talinum fruticosum</i>	Talinaceae	Herb
3.	Pawpaw	<i>Carica papaya</i>	Caricaceae	Tree
4.	Elephant grass	<i>Pennisetum purpureum</i>	Poaceae	Herb
5.	Mango	<i>Mangifera indica</i>	Anacardiaceae	Tree
6.	Plantain	<i>Muse paradisiaca</i>	Musaceae	Herb
7.	Siam weed	<i>Chromolaena odorata</i>	Asteraceae	Shrub
8.	Lipstick plant	<i>Nice orellana</i>	Bixaceae	Shrub
9.	River tamarind, white lead tree	<i>Leucaena leucocephala</i>	Fabaceae	Shrub
10.	Madagascar almond, umbrella tree	<i>Terminalia mentaly</i>	Combretaceae	Tree
11.	African oil palm	<i>Elaeis guineensis</i>	Arecaceae	Tree
12.	Wire weed	<i>Side acuta</i>	Malvaceae	Herb
13.	Ruby leaf, black night	<i>Alternanthera brasiliana</i>	Amaranthaceae	Herb
14.	Ribwort plantain	<i>Plantago lanceolata</i>	Plantaginaceae	Herb
15.	Hairy croton	<i>Croton hirtus</i>	Euphorbaceae	Herb
16.	West Indian pink root	<i>Spigelia anthelmia</i>	Loganiaceae	Herb
17.	Touch-me-not, sensitive plant	<i>Mimosa pudica</i>	Fabaceae	Herb
18.	Lilac tassel flower	<i>Emilia sonchifolia</i>	Asteraceae	Herb
19.	Angel's trumpet	<i>Datura metel</i>	Solanaceae	Shrub
20.	Rushes	<i>Juncus conglomeratus</i>	Juncaceae	Herb
21.	Hilo grass, carabo grass	<i>Paspalum conjugatum</i>	Poaceae	Herb
22.	Teak	<i>Tectona grandis</i>	Lamiaceae	Tree
23.	Black afara, coast almond	<i>Terminalia ivorensis</i>	Combretaceae	Tree
24.	The false ashoka	<i>Monoon longifolium</i>	Annonaceae	Tree
25.	Mallow hind weed, mallow leaved bind weed	<i>Convolvulus althaeoides</i>	Convolvulaceae	Herb
26.	Jointed flatsedge	<i>Cyperus alulatus</i>	Cyperaceae	Herb
27.	Water finger grass	<i>Paspalum distichum</i>	Poaceae	Herb
28.	Black locust	<i>Robinia pseudoacacia</i>	Fabaceae	Tree
29.	Sunflower goldeneye	<i>Viguiera dentate</i>	Asteraceae	Herb
30.	Water crown grass	<i>Paspalidium</i>	Poaceae	Herb
31.	Golden dew drop	<i>Duranta erecta</i>	Verbenaceae	Shrub
32.	Chinese thuja, oriental thuja	<i>Oriental arborvitae</i>	Cupressaceae	Tree
33.	Little iron weed	<i>Cyanthillium</i>	Asteraceae	Herb
34.	Strawberry guava	<i>Psidium cattleianum</i>	Myrtaceae	Tree
35.	Pokok pecah kaca	<i>Strobilanthescrispa</i>	Acanthaceae	Herb
36.	Bitter leaf	<i>Vernonia amygdalina</i>	Asteraceae	Shrub
37.	Lemon grass	<i>Cymbopogon citratus</i>	Poaceae	Herb
38.	Creeping indigo	<i>Indigofera spicata</i>	Fabaceae	Herb
39.	Bamboo	<i>Bambusa vulgaris</i>	Poaceae	Herb
40.	Nodding spurge	<i>Euphorbia nutans</i>	Euphorbaceae	Herb
41.	Sugarcane	<i>Saccharum officinarum</i>	Poaceae	Herb
42.	Fluted pumpkin	<i>Telfaira occidentalis</i>	Cucurbitaceae	Herb
43.	Jungle flame	<i>Ixora coccinea</i>	Rubiaceae	Shrub
44.	King of bitter	<i>Andrographis paniculata</i>	Acanthaceae	Herb
45.	Cotton plant	<i>Gossypium hirsutum</i>	Malvaceae	Herb
46.	Scent leaf	<i>Ocimum grtissimum</i>	Lamiaceae	Herb
47.	Barbados nut	<i>Jatropha curcas</i>	Euphorbiaceae	Tree
48.	Air plant or miracle plant	<i>Bryophyllum pinnatum</i>	Crassulaceae	Herb
49.	Butterfly pea	<i>Clitoria ternatea</i>	Fabaceae	Herb
50.	Pigeon grass	<i>Setaria pumila</i>	Poaceae	Herb
51.	Water mint	<i>Mentha aquatica</i>	Lamiaceae	Herb
52.	Fertility tree	<i>Newbouldia laevis</i>	Bignowliaceae	Tree
53.	Egg plant	<i>Solanum melongena</i>	Solanaceae	Herb
54.	Tridax	<i>Tridax procubens</i>	Asteraceae	Herb
55.	Goat weed	<i>Ageratum conyzoides</i>	Asteraceae	Herb

Field survey, 2021

Table 2: Medicinal plant species along the 3 walkways of site 3, Delta State University, Abraka

S/N	Common Name	Scientific Name	Plant part used	Treatment
1.	Black locust	<i>Robinia pseudoacacia</i>	F	They are cooked and eaten for the treatment of eye ailments
2.	Lilac tassel flower	<i>Emilia sonchifolia</i>	WP	Treatment of night blindness, malaria, liver disease, burns, eye inflammation

3.	Hairy croton	<i>Croton hirtus</i>	L	To cure diarrhoea, dysentery, constipation
4.	African oil palm	<i>Elaeis guineensis</i>	WP	To treat tumours, pains and rheumatism, high blood pressure
5.	Little iron weed	<i>Cyanthillium cinereum</i>	R/L	To treat fever, worms, malaria, coughs, asthma, also aids digestion and stimulate appetite
6.	Mango	<i>Mangifera indica</i>	WP	To aid stomach ulcer, and digestive conditions
7.	Sunflower goldeneye	<i>Viguiera dentata</i>	L	To cure malaria fever
8.	Sensitive plant, touch-me-not	<i>Mimosa pudica</i>	L	For treating haemorrhoids and urinary infections
9.	Teak	<i>Tectona grandis</i>	W	For treating gastrointestinal disorder such as: dysentery, stomach ache, piles and constipation
10.	Plantain	<i>Musa paradisiaca</i>	L	To treat insect bites, coughs, eczema and small wounds or cuts
11.	Pawpaw	<i>Carica papaya</i>	L	Treatment of tract disorders, infections, nerve pains and elephantoid growths.
12.	Strawberry guava	<i>Psidium cattleianum</i>	L/F	Protection against heart disease, diabetes and cancer
13.	West Indian pink root	<i>Spigelia anthelmia</i>	R/B	They are taken along with laxative to get rid of intestinal worms
14.	Angel's trumpet	<i>Datura metel</i>	L/F	To induce hallucinations and euphoria, also for treating asthma
15.	Mallow hind weed, mallow leave bind weed	<i>Convolvulus althaeoides</i>	F/L	To treat irritations of the mouth and throat, dry cough, stomach and bladder complaints
16.	Scent leaf	<i>Ocimum gratissimum</i>	WP	To kill bacteria in the mouth, to prevent tooth decay, lowers blood sugar and treating of fungal infections
17.	Sugarcane	<i>Saccharum officinarum</i>	F	Helps to treat urinary tract issues, help remove excess salt and water to help the kidney function properly
18.	Fertility tree	<i>Newbouldia laevis</i>	WP	To cure wounds, ulcers and treatment of infertility in women
19.	Air plant or miracle plant	<i>Bryophyllum pinnatum</i>	WP	Cough medicine is made from the root, treatment of ringworm, dysentery, pains, wounds and diarrhoea
20.	King of bitters	<i>Andrographis paniculata</i>	L/S	For treating cold, fever, hepatitis, gastrointestinal tract and upper respiratory infections
21.	Lemon grass	<i>Cymbopogon citratus</i>	L	For treating digestive tract spasms, pains, stomach ache, high blood pressure, cold
22.	Tridax	<i>Tridax procubens</i>	L	For treating malaria, headaches, blood pressure, dysentery, diarrhoea, stomach ache
23.	Butterfly pea	<i>Clitoria ternatea</i>	L	For improvement of weight loss, better blood sugar control, also to improve hair and skin health
24.	Fluted pumpkin	<i>Telfaira occidentalis</i>	L	To increase the haemoglobin levels rapidly in the human body during the treatment of anaemia
25.	Egg plant	<i>Solanum melongena</i>	WP	The seeds are used to treat tooth ache, it is nutritious in soup and stew, to treat infections and to heal wounds
26.	Bitter leaf	<i>Vernonia amygdalina</i>	WP	It helps to clean the liver and kidney, it is also used to treat skin infections such as ringworm, rashes and eczema, the leaf can be consumed to treat fever
27.	Pokok pecah kaca	<i>Strobilanthes crispata</i>	L	For treatment of cancer and diabetes
28.	Water finger grass	<i>Paspalum distichum</i>	L	For the treatment of cough, constipation or indigestion
29.	Chinese thuja	<i>Oriental arborvitae</i>	L	For the treatment of respiratory tract infections such as bronchitis, bacteria skin infections and cold sores
30.	Goat weed	<i>Ageratum conyzoides</i>	L	For treating back and knees, joint pain, memory loss, high blood pressure, heart disease, liver disease
31.	Water leaf	<i>Talinum fruticosum</i>	WP	As source of nutrients, the leaves are used to treat eye pain, prevention of malaria, it is recommended for pregnant women to clear bilirubin from the blood
32.	Wire weed	<i>Soda acuta</i>	L/B	Is used for treating coughs, diabetes, the bark is taken as stomach cleanser, the leaves are chewed and the juices are swallowed for a sore throat
33.	Ribwort plantain	<i>Plantago lanceolata</i>	L	Is used for safe and effective treatment for bleeding, it encourages the repair of damaged tissues to promote faster healing
34.	Hilo grass	<i>Paspalum conjugatum</i>	L	For the treatment of fever, diarrhoea, bronchial asthma
35.	Black afara	<i>Terminalia</i>	WP	To treat asthma, breathing disorder, wheezing, wounds



36.	Creeping indigo	<i>ivorensis</i> <i>Indigofera</i>	L	To alleviate pains, reduce inflammation and fever, to purify the liver, to treat scorpion bites
37.	Bamboo	<i>spicata</i> <i>Bambusa</i> <i>vulgaris</i>	S	To ease labour and expulsion of the placenta by inducing uterine contractions, for cleansing wounds and healing infections, it is taken along with honey to treat respiratory disorders
38.	Nodding spurge	<i>Euphorbia</i> <i>nutans</i>	R	For breathing disorders, diarrhoea and skin diseases
39.	Jungle flame	<i>Ixora coccinea</i>	F	For the treatment of dysentery, diarrhoea and fever
40.	Cotton plant	<i>Gossypium</i> <i>hirsutum</i>	WP	Used for fever, headaches, diarrhoea, dysentery, nerve pain and bleeding, also used to improve breast milk production
41.	Barbados nut	<i>Jatropha curcas</i>	L	For the treatment of coughs, convulsions, jaundice, fever and rheumatism pains
42.	Water mint	<i>Men the</i> <i>equatica</i>	L	It helps to reduce abdominal pain and helps to treat irritable bowel syndrome without producing side effects
43.	Pigeon grass	<i>Setaria pumila</i>	WP	The leaves are used as treatment of coughs, diarrhoea, sores, wounds
44.	Golden dew drop	<i>Durante erecta</i>	F	For the treatment of malaria, heart diseases
45.	Cassava	<i>Manihot</i> <i>esculenta</i>	WP	For treating wounds, to treat mild fever, dehydration, diarrhoea, to induce labour, it also serve as food
46.	Elephant grass	<i>Pennisetum</i> <i>purpureum</i>	WP	The seed is used to cure headaches, the sap and stem is used for treating wounds and ear problems
47.	Lipstick plant	<i>Bixa orellana</i>	WP	For treating dysentery, diarrhoea, the seeds are ground and boiled and used on burns
48.	Siam weed	<i>Chromolaena</i> <i>odorata</i>	WP	To treat wounds, burns, skin infections, it also possess anticancer and anti-diabetic
49.	River tamarind	<i>Leucaena</i> <i>leucocephala</i>	WP	To relief abdominal pain and diarrhoea
50.	Ruby leaf	<i>Alternanthera</i> <i>brasiliiana</i>	WP	Especially the leaf for treatment of painful menstruation, diabetes, high blood pressure, chronic coughs, cancer
51.	Madagascar almond	<i>Terminalia</i> <i>mentaly</i>	L	For treating coughs, stomach ache, digestive tract

KEY: F = fruits/flower, R = Root, S = stem/seed, L = leaf, W/P – whole plant, L/B = leaf & bark, L/S = leaf & seed, R/L = root & leaf, L/F = leaf & flower, F/L = fruit & leaf Field survey (2021).

### Discussion

The distribution pattern of the plant species showed total decimation in the species number with the highest occurrence recorded in herbs followed with trees and shrubs vegetation, this is as a result of unsustainable human activities as reported by Nodza *et al.* (2014) in their study. It is believed that before and during the establishment of the University, the biodiversity of the area has constantly been altered which follows a series of successive redevelopment for higher intensity land use, which has culminated and is escalating in an unprecedented manner. The result of the analysis of the diversity of plant species along the 3 walkways of Site 3 showed that there was a significant difference between herbaceous (herbs) species occurrence in relation to trees and shrubs.

Herbs represented the first life form, accounting for 34 species which include: *Ageratum conyzoides*, *Talinum fruticosum*, *Alternanthera* spp. and *Elaeis guineensis* among others. Trees represented the second life form, accounting for 12 species which include: *Carica papaya*, *Terminalia ivorensis*, *Tectona grandis* and *Convolvulus althaeoides* among others. While shrubs represented the least life form, accounting for 8 species which include: *Manihot esculenta*, *Nice orellana*, *Chromolaena odorata*, *Datura metel* and *Ixora coccinea* among others. The highest occurrence of herbs along the three walkways can be attributed to the selective destruction of shrubs and trees since most of the herbaceous plant species are of great medicinal benefits to the dwellers within the environs of the University in the treatment of different ailments. The

differences in the number of occurrence between the shrubs and tree life forms can be attributed to the landscaping implemented by the University management

Based on the diversity of families, the study showed that the family Asteraceae is the most dominant, and accounting for 5%, having the highest number of occurrence of species, which was followed by Poaceae (4%), Fabaceae, and Combrecaceae among others. Similar results have been reported by Iheyen *et al.* (2009). The dominance of plant species belonging to the family of Asteraceae among other families along the three walkways of the study area is similar to the study conducted by Agbogidi *et al.* (2021) in documenting the fruit trees species diversity in Site 2 of the same University.

### Conclusion

The study has provided details on the diversity of plant species growing in the study area and highlighted the different life forms, families, scientific and common names. However, it is very evident that conservation is no longer effective to conserve the plant species growing in this area as a result of planned institutional development and various forms of degradation processes exacerbated by population growth.

### Recommendation

The study recommends that there is a need to deduce an effective means of conserving the species through ex-situ methods, by providing a space for botanical

gardens or farms where most species can be conserved in appropriate repositories and for future purposes.

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